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Key Finding

People and machines learn and behave differently at all stages of the investment process.

Business Application

Quantitative and discretionary mutual funds are significantly different, and this difference needs to be taken into consideration if we want to understand how they invest.

Advancements in computing power and machine-based analytics have revolutionised the asset management industry and give every indication of continuing to do so. These developments underpin the rise of quantitatively managed funds, whose investment process is based primarily on quantitative signals generated by computer-driven models. In contrast, discretionary funds rely mostly on decisions by asset managers who use information and their own judgement. Although quantitative funds are widely believed to have increased in number and assets under management, precise statistics are lacking. The study of this phenomenon and its implications has been hampered by the lack of a systematic way to distinguish quantitative from discretionary funds.

To address this gap and foster the study of this topic, I have developed a novel methodology based on a machine-learning analysis of the text in funds prospectuses, to classify US equity mutual funds as quantitative and discretionary. By doing this I have been able to quantify the growth in quantitative investment management. To study the differences between quantitative and discretionary investors more formally, I propose a model based on differences in learning, where quantitative investors have greater capacity to process information but less flexibility to adapt their strategies. Modelling this trade-off between capacity and flexibility has led to many precise and testable predictions that I have been able to test empirically, thanks to the classification developed. I find that quantitative funds on average hold twice as many stocks as discretionary funds. For discretionary funds, the top stock pickers in expansions are also the top market timers in recessions; for quantitative funds, the top stock pickers are the same across business cycles. In recessions, discretionary funds outperform quantitative funds, which in turn display better portfolio diversification and risk management. These differences need to be taken into account to understand the investment behaviour and performance of funds and their impact on financial markets.

Read more: “Man vs. Machine: Quantitative and Discretionary Equity Management”

Simona Abis is an Assistant Professor of Business in the Finance Department of Columbia Business School. She holds a PhD from INSEAD. To know more, visit her website: <https://www.simonaabis.com/>

Research interests: the impact of technology on financial markets, information economics, empirical and theoretical asset pricing, Bayesian learning, machine learning, mutual funds and hedge funds.